



# M. Tech in

## Artificial Intelligence & Data Science Engineering



BUSINESS

What is AI?  
A Beginner's Guide



### Electives

Advanced Communication Systems

Big Data Analytics

Blockchain Technology

Cybersecurity

Edge (Cloud) Computing

Embedded Systems

Internet of Things

Natural Language Processing (NLP)



# 1 in India  
# 13 in Asia in  
NLP  
csrankings.org\*



# 2 in India  
Today's MDRA  
Ranking 2023\*



# 21 National  
Institutional  
Ranking Framework\*



# 106 in the  
BRICS QS  
University  
Rankings\*



# 601  
World University  
Rank 2024\*

> Hybrid (Online/In Campus) mode of instruction

> IIT Patna Alumni Status

### Overview

AI is set to transform business like never before, creating new opportunities for entrepreneurs, business leaders and workers in every industry. IIT Patna's Executive M. Tech in Artificial Intelligence & Data Science Engineering programme has been designed for professionals across industries, looking to gain hands-on knowledge of AI implementation while building the next generation business models.

### Who is this Programme for?

**Early to Mid Level Professionals seeking career growth**

This programme is aimed to provide hands-on knowledge of AI implementation especially in the areas of Speech Technologies, Computer Vision and Natural Language Processing to early-career enthusiasts such as: Data Analysts, Business Analysts, Data Scientists, ML Engineers, Computer Programmers, Developers, Softwarer Engineers.

### Programme Features



100% Live interactive classes (Online)  
with doubt clearing sessions on weekends



Fully Compliant to NEP 2020  
Curriculum Framework Structure



Industry Skill Oriented & at par with  
Global standard



Course learning outcome mapped  
with Industry Demand



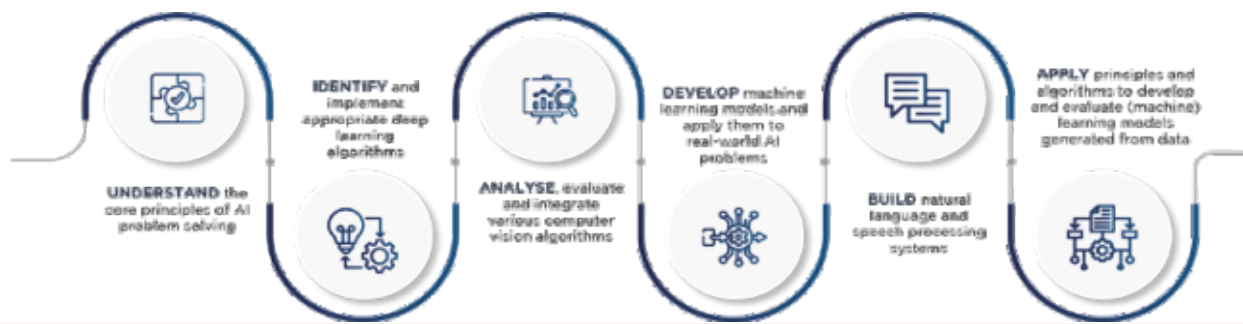
Remote access of the eLibrary of  
IIT Patna



Unique blend of learning and work experience  
through PAID APPRENTICESHIP / Internship  
opportunities based on merit



Accident & Health Insurance Cover  
for Students and Parents



# Director's Message



It gives me immense joy to welcome you to the Quality Improvement Program (QIP), the new academic unit in the IIT Patna system. QIP aims to combine technology and management to prepare students to explore a future of possibilities. QIP plays a crucial role in upgrading and enhancing the capabilities and skill sets of pursuing graduates/ graduates and working professionals in technology & management education. With its industry-oriented future-centric curriculum, exceptional faculty, and strong international footprint, QIP has the right ingredients to achieve a leadership position among its peers in the time to come.

IIT Patna will undertake the following activities under QIP: Faculty Development Programme (FDP), Short Term Courses, Knowledge Dissemination Programme, National Summer & Winter Term and Internship (NSWTI), International Summer & Winter Term and Internship (ISWTI), Certificate Programmes, Online Courses and Training Programme for the School Students, Certificate Programmes, Executive Programmes.

I wish QIP and all its stakeholders a purposeful and joyful journey ahead and felicitate all its endeavours. I invite you to be part of this exciting journey and participate in the success of QIP at IIT Patna.

I welcome you to become a part of our story and to form a long-lasting association with the institute.

**Prof. T.N. Singh**

**Director, Chief Academic Mentor, QIP, Indian Institute of Technology Patna**

**Dean (Academics & Administration)**

**Prof. A. K. Thakur**

Prof. A. K. Thakur continuing currently as the Professor of Physics at the Department of Physics at Indian Institute of Technology, Patna & Dean Academics, IIT Patna. Prof. Thakur is Gold Medalist at M.Sc.(Physics). He is recipient of the coveted "Nehru Fellowship" for pursuing Doctoral Research at the National University of Singapore (QS Rank 8). Currently, he is Vice president of the Asian Society for Solid State Ionics

The research expertise of Prof. Thakur is experimental condensed matter physics and applied physics with interest of specific experimental research comprising; a). Renewable clean and green energy, b). Solid state Ionic devices, c). Storage cells, d). Solar photovoltaics, e). Dielectrics and Ferroelectrics, f). Processing & fabrication of nanomaterials, g). E.M.I. shielding, h). Battery Management System (BMS) design and fabrication for operational safety of battery packs for EV applications, i). Product design simulation and development for commercialization.



**Associate Dean (RnD & Resource) & Project Director (TiH), IIT Patna**

**Dr. Anup Keshari**



**Programme Coordinator**

Anup Kumar Keshari is currently an Associate Professor in Dept. of Metallurgical and Materials Engineering at Indian Institute of Technology (IIT), Patna, India since Feb. 2022. Before joining IIT Patna, Dr. Keshari worked with Centre for Nanotechnology Group, Bharat Heavy Electricals Limited (BHEL), Corporate R&D, Hyderabad, India between April 2012-September 2013. He worked as an Associate Professor in School of Mechanical and Building Sciences at Vellore Institute of Technology (VIT), Vellore, India since April 2011. Anup Kumar Keshari, received his Ph.D. degree in Materials Science and Engineering from Florida International University (FIU), Miami, USA in July, 2010 and worked as Postdoctoral fellow in FIU until March 2011. He has a B.E. degree in Metallurgical Engineering from Bihar Institute of Technology (BIT), Sindri, India in 2002 and a M.S. degree in Metallurgical and Materials Engineering from Indian Institute of Technology (IIT), Madras, India in 2004. He worked as Asst. Manager in Ispat Industries Limited, Mumbai (2004– 2006). His main research interest lies in surface Engineering, plasma spraying, CNT/graphene reinforced metal and ceramic composite coatings, mechanical, corrosion and tribological behavior of coatings.





# Advisory Board Members



**Dr. Ravi P. Singh**  
Secretary General,  
Quality Council of India  
(September 2014-till date)



UG and PG from BHU, Varanasi, Ph.D and Postdoctoral experience in University of Western Ontario at London, CANADA. Dr Singh has experience in research, teaching and administration for the past more than 18 years in Professor Scale or above.

#### Past Positions:

Director, Regional Services Division (RSD), IGNOU, Maidan Garhi, New Delhi-110068 (2011-12); Founder-VC, Sharda University (2009-11); Dean, Punjab Technical University (2004-09); Associate Dean, PTU, (2003-04); Deputy Director, AICTE (2001-03); Regional Officer of AICTE, Kanpur (1996- 99) and Kolkata (2000-2001); Assistant Director, AICTE (1996-01).

#### Education:

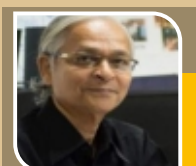
Ph.D (1994) and Postdoctoral Fellowship in Physics from Canada (1994-95), Gold Medal from BHU in MSc (1989), NET-CSIR qualified (1989) and Topper of Honors Program in Physics (1987).



**Prof. Rajeev Srivastava**  
Professor CSE & Dean (Resource and  
Alumni Affairs) IIT (BHU), Varanasi



Prof. Rajeev Srivastava is currently working as a Professor in the Dept. of Computer Sc. & Engineering, Head of the Centre for Computing and Information Services (CCIS) and the Dean (Resource and Alumni Affairs), Indian Institute of Technology (BHU), Varanasi. He also served as Head of the Department of Computer Science and Engineering during August'2017-December'2020. He holds the degrees of B.E., M.E., and PhD all in Computer Science & Engineering and possess 23+ years of teaching and research experience. He is a Fellow of Institution of Engineers (India) (FIE), Institution of Electronic and Telecommunication Engineers (FIETE), Senior Member IEEE USA, and Member ACM USA. He has published around 165+ research papers in reputed international journals and conferences, 04 research reference books, and 18 book chapters and a patent. He had been the Principal Investigator of research projects funded by MoE, Govt. of India and DRDO, Govt. of India. He has produced 13 PhDs, and 3 PhD thesis submitted and 04 PhDs are ongoing under his Supervision. He serves as Expert Member on different panels of NBA, UGC, UPSC, DRDO, UPPSC, reputed Institute and Universities of the Govt. of India. His research interests lies in the areas of Artificial Intelligence (AI), Machine Learning, Deep learning, Image and Video Processing, Computer Vision, and Computational Bioinformatics.



**Prof. H.P. Mathur**  
Dean and Head  
Faculty of Management Studies (Institute  
Of Management Studies)  
Banaras Hindu University, Varanasi



UG and PG from BHU, Varanasi, Ph.D and Postdoctoral experience in University of Western Ontario at London, CANADA. Dr Singh has experience in research, teaching and administration for the past more than 18 years in Professor Scale or above.

#### Current Affiliation:

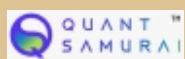
Dean and Head, Institute of Management Studies, Banaras Hindu University (FMS-BHU)

Chairman, International Centre, Banaras Hindu University  
Chairman, Investment Committee, Banaras Hindu University  
Chairman, Placements and Corporate Affairs, Institute of Management Studies, Banaras Hindu University (FMS-BHU)  
Promoter Director, Atal Incubation Centre- Mahamana Foundation for Innovation and Entrepreneurship- Institute of Management Studies (Supported by Atal Innovation Mission, NITI Aayog, Government of India)  
Director/Chairman (Non-Executive), Utkarsh Welfare Foundation  
Member, Board of Governors, University of Petroleum and Energy Studies, Dehradun  
Member, Departmental Advisory Board, National Council of Educational Research and Training

#### Positions (Held):

Coordinator, Placement Coordination Cell, Banaras Hindu University  
Chief, University Employment and Information Guidance Bureau, Banaras Hindu University  
Coordinator, International Centre, Banaras Hindu University

## Industry Advisors



[www.quantsamurai.com](http://www.quantsamurai.com)



Increase your Cyber  
Quotient

#### Rajiv Singh

Founder CEO – Quant Samurai (A Global Cybersecurity Entity)  
Advisory Board of The Center For Innovation Commercialization, USA  
Advisory Board of School of CyberPeace, India

#### Entrepreneur Experience:

Founder CEO of IndiCash (A TATA Group Venture), India  
Founder CEO of ACCPAC (A Computer Associates Venture), USA

#### Leadership Experience:

Global Head – Cyber security - Tech Mahindra  
Managing Director - Entrust Datacard, USA  
President – TATA Communications Banking Infra Solutions Ltd.  
Managing Director - Diebold, USA  
Managing Director - Computer Associates (CA), USA

- Trusted Security Advisor to Governments, Law Enforcement, Military, and Enterprises across Global Markets. Experience with Military grade Cybersecurity Technologies & Services.
- Expertise in Innovative US Dept of Defense approved Cyber technologies, Silicon Valley & Israel Start-ups.
- NextGen Advanced Cyber Defence, Cyber Upskilling, National Security, and Zero-Trust
- Security Strategy.

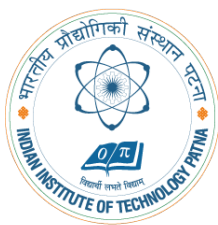


**Dr. Shourya Roy**  
Senior Research Director, Flipkart



Dr. Shourya Roy is a seasoned technology leader with specialization in Artificial Intelligence and Machine Learning. Over the past two decades, he has led data science, data product, and data analytics teams with IBM, Xerox, American Express, and Flipkart. His past work includes a range of foundational and applied research, strategic innovation, product management, and building local and global teams. A thought leader and author of about a hundred peer-reviewed papers in premier journals and conferences and over 30 granted patents.





" Enrol, Educate, Excel and Transform Career Trajectory"

## Stat of 2022-23 Placement Session

		Sectors
Placement Percentage	: 91.26%	• Analytics/Consulting,
Average Pay Package	: 23.09 LPA	• Fintech
Highest Pay Package	: 82.05 LPA	• Banking & Finance
No. of visiting company	: 165	• E-Commerce
No. of international offers	: 19	• Ed Tech, IT/Software
		• Manufacturing Core
		• Research & Development
		• Automotive
		• Education
		• Healthcare
		• Logistic & Others.







# M.Tech (AI & DSE)

## Admission Eligibility Criteria 2024-26

### Domestic Indian Candidates

1. An aspiring student should have a B.Tech / BE / MSc (Computer Science/Information Technology/Bio-informatics, Biotechnology, Mathematics, Statistics, Physics, Information Science) / MCA / ME / M.Tech degree.
2. At least a 60% scored in the final marks of the eligible degree program or a minimum CGPA or CPI of 6.5 on the scale of 0-10 with corresponding proportional requirements when the scales are other than 0-10 (for example, 4.8 on a scale of 0-8).
3. In case of MCA /MSC passed with UG, the percentage score of MCA/MSC would be considered. In case of a BE/BTech Engineering degree passed without PG specialization, the percentage score of the undergraduate degree would be considered. In case of an engineering graduate degree pass out with a post-graduation in the Engineering field of study, either of the UG or PG score qualification can be considered.

### Relaxation:

In case of the candidate belonging to scheduled caste (SC)/ Scheduled Tribe (ST)/ Persons with Disability (PwD) category, this is relaxed to 55% or equivalent CGPA/ CPI.

### International Candidates

A foreign national or person of Indian origin (PIO) holding a foreign passport quality is to be considered an international applicant.

1. A four-year Bachelor's degree or a Master's Degree in any discipline with first class or a cumulative CGPA/CPI equivalent to 60% marks in aggregate (e.g., minimum CPI of 6.5 out of 10) is required.
2. CA, CS, CFA, ICWA, ACCA, CIMA or FRM qualification holders with a preceding undergraduate degree in any discipline with first class or a cumulative CGPA/CPI equivalent to 60% marks in aggregate (ex.: minimum CPI of 6.5 out of 10),
3. Those appearing for the final degree examination can also apply. The admission in such cases will be provisional subject to their fulfilling the minimum eligibility criteria stated in (1) or (2) before commencement of the program.
4. English proficiency test qualification evidenced by TOEFL/IELTS score is mandatory. However, it may be waived for applicants who completed their graduation with English as the medium of instruction (a letter from their University that English was their first language during their undergraduate degree is required).
5. Valid Score in aptitude test(s): GRE/GMAT/CAT/BMAT/GATE is desirable.

FEE STRUCTURE	
Domestic Indian Candidates	International Candidates
Registration Fee	
₹5,000 (Included In Semester Fee)	\$100 (Included In Semester Fee)
Semester Fee	
₹73,000 Per Semester	\$1,810 Per Semester
Alumni Fee (One Time)	
₹ 6,000 (One Time)	\$ 150 (One Time)

### Fee Payment Detail

#### or Bank Transfer

Account Name: CEP-IIT PATNA-MICROTEK  
Account No : 40987488564  
IFSC No : SBIN0017164  
MICR Code : 801002005  
Swift Code : SBININBB  
Branch : IIT Patna, Bihta Campus, Bihar

#### or Scan & Pay



You can also pay your fee on  
**easy EMI with 0% interest**  
and 0 down payment.

Contact: +91 9795093000  
accounts@iitp-cep.in

By using UPI on

UPI ID:90958035218@SBI

# "Enrol, Educate, Excel and Transform Career Trajectory"

**Ranked\***  
**2nd**

in Emerging Government  
Colleges in a Best College  
Ranking 2022 by India  
Today-MDRA

**Ranked\***  
**9th**

for placement records

**Ranked\***  
**10th**

Best Government  
Engineering College in the  
performance category  
overall

**3300+\***  
**Alumni**

serving national and  
international institutions at  
leadership positions

## Stand out with this IITP M.Tech Degree Certificate

A student is declared eligible for the award of an Executive M.Tech. degree if:

He/she has completed all of the credit requirements for the degree with a grade of DD or higher in each of the subjects (Theoretical, Laboratory, Workshop, Sessional, etc), Seminar, Project, and so on.

Obtained a CPI of 6.0 or higher at the end of the semester in which he/she has completed all degree requirements

*Note:*

-All certificate images are for illustrative purposes only and may be subject to change at the discretion of IIT Patna.

## IIT Patna Alumni Benefits

Access to Lifelong IIT Patna Email ID.  
Permanent access to the e-library of the institute.  
Concession in IIT Patna Guest House accommodation

charges.  
Easy access to the campus and sports and gym facilities at IIT Patna..

Network with global alumni community and opportunity to promote startup ideas as well as their owned business.

Organise events on campus such as Homecoming events, Alumni awards ceremonies, and Reunions. Invitation to Alumni Specific events during College Fests.

# 100% PLACEMENT SUPPORT\*





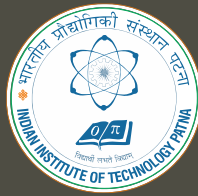
**Seats are filling up fast for this exciting Master's Degree program and early applications are encouraged!**

\* Conditions Apply





-  Live Online Preparatory Classes shall start w.e.f 30 March 2024, followed by Assignments & Assessments till 15th June 2024
-  June 2024 Assessment & Doubt Clearing QA Sessions.
-  w.e.f July 2024 onwards Regular Classes of 1st Semester.
-  1<sup>st</sup> Term Exam in Dec 2024
-  Regular Classes of 2<sup>nd</sup> Term Jan 2025
-  2<sup>nd</sup> Term Exam May 2025
-  3<sup>rd</sup> Semester Classes - Dissertation work starting July 2025 onwards.
-  Presentation on Thesis or Dissertation.
-  Final Term Research Paper Publication with Programme Coordinator.
-  Final Assessment.
-  Award of Degree Certificate during Convocation (2026).



**Indian Institute  
of Technology Patna**  
भारतीय प्रौद्योगिकी संस्थान पटना



Kanpa Road, Bihta, Patna – 801106, India, Phone: 06115-233102

# M.Tech in AI & DSE

## Elective Options & Programme Co-Coordinator Details

### 1. Computer Science:

- Cybersecurity - Edge- (Cloud) Computing -  
Blockchain - Quantum Computing -Edge (cloud)  
Computing & -IoT

**Prof. Rajeev Mishra, HOD, CSE IIT Patna & his team**

### 2. Electronics:

- Internet of Things (IoT) - Embedded Systems - VLSI  
Design - Robotics - Advanced Communication  
Systems

**Dr. Sai Kiran CEO, TIH- IIT Patna & his team**

### 3. Drone Technology:

- Unmanned Aerial Vehicles (UAVs) Design -  
Computer Vision for Drones - Autonomous Systems  
- Aerodynamics and Flight Dynamics

**Dr. Amit Verma, HOD (I/C) Department of Civil  
Engineering IIT Patna & his team**

### 4. Civil Engineering:

- Structural Health Monitoring - Building  
Information Modelling (BIM) - Smart Cities  
Technology - Sustainable Construction -  
Geotechnical Engineering

**Dr. Amit Verma, HOD (I/C), Civil Engineering & his  
team**

### 5. Material Science:

- Nanotechnology - Biomaterials - Advanced Materials  
for Energy - Smart Materials - Composite Materials

**Dr. Anup Keshari ADean RnD & PD-TIH, IIT Patna &  
his team**

### 6. Data Science:

- Big Data Analytics - Natural Language Processing  
(NLP) - Predictive Analytics - Data Engineering -  
Computer Vision

**Dr. Asif Ekbal, Dr. Sriparna Saha and the team**

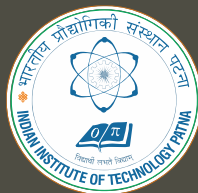
### 7. Artificial Intelligence Engineering:

- Reinforcement Learning - Explainable AI - AI Ethics  
and Governance - Generative Adversarial Networks  
(GANs) - Edge AI

**Dr. Sriparna Saha / Dr. Rishabh Singh**

Central Lecture Hall, IIT Patna





**Indian Institute  
of Technology Patna**  
भारतीय प्रौद्योगिकी संस्थान पटना



Kanpa Road, Bihta, Patna – 801106, India, Phone: 06115-233102

# M.Tech in AI & DSE

## Preparatory Class Schedule

1. March 30, 2024

Introduction to Computer Science and Engineering  
Introduction to Artificial Intelligence and Data  
Science Engineering  
Interaction for Query Schedule (Q&A)

2. April 06, 2024

Fundamentals of Data Structures  
Fundamentals of Theory of Computation  
Assignment on Data Structure using C

3. April 13, 2024

Tutorial on Python

4. April 20, 2024

Preliminary of Algorithms  
Search in AI and Data Science

5. April 27, 2024

Assignments on Algorithms  
Assignment on AI and Data Science using Python

6. May 04, 2024

Database Preliminary  
Fundamentals of Machine Learning

7. May 11, 2024

Assignment on database  
Assignment on machine learning

8. May 18, 2024

Supervised Machine Learning  
Unsupervised Machine Learning

9. May 25, 2024

Research Trends-2: AI, Data Sciences and CSE

10. June 01, 2024

Research Trends-1: AI, Data Sciences and CSE

11. June 15, 2024

Sample Assessment shall be treated as a reference  
for the semester examinations.

### Major Organizations where Participants work



Organizations where Participants are employed at the time of joining the programme

**EMAIL US**

info@iitp-cep.in

**VISIT OUR WEBSITE**

<https://registrations.iitp-cep.in> (Admission Portal)

<https://cet.iitp.ac.in> (Academic Portal)

<https://cetsat.iitp.ac.in> (IITP-SAT Portal)



**+91 9021156156**



**+91 7309550000**

WhatsApp Calling No for International Students



**+91 73177 14600**

# Degree Certificate

अभिषद की अनुशंसा पर  
भारतीय प्रौद्योगिकी संस्थान पटना  
के अभिशासक परिषद द्वारा  
XXXX  
प्रौद्योगिकी परास्नातक की उपाधि आर्टिफिसियल इंटेलिजेंस  
में छब्बीस अगस्त दो हजार चौबीस को पटना में प्रदान की गयी

The Board of Governors  
of the  
Indian Institute of Technology Patna  
upon the recommendation of the Senate hereby confers the degree of  
Master of Technology in Artificial Intelligence  
on  
XXXX

given at Patna on this Twenty Sixth day of August, Two Thousand Twenty Four

Registrar

Director

Chairman, Board of Governor

Date: 26 Aug 2024

**EMAIL US**  
info@iitp-cep.in

**VISIT OUR WEBSITE**  
<https://registrations.iitp-cep.in> (Admission Portal)  
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# Indian Institute of Technology, Patna

Bihta, Patna -801106 (Bihar)  
Ministry of Education, Govt. of India

READY TO ADVANCE YOUR CAREER?

**APPLY NOW**

<https://registrations.iitp-cep.in> (Admission Portal)

<https://cet.iitp.ac.in> (Academic Portal)

<https://cetsat.iitp.ac.in> (IITP-SAT Portal)

**SPEAK TO A PROGRAM ADVISOR  
HAVE QUESTIONS ABOUT THE PROGRAM OR  
HOW IT FITS WITH YOUR CAREER?**

**CONTACT FOR ADMISSIONS**

**+91 9021156156** WhatsApp Calling No for International Students  
 **+91 7309550000**  **+91 73177 14600**

**EMAIL US**

**info@iitp-cep.in**

